

NURSING CARE OF THE OBESE CRITICALLY ILL PATIENT

Nursing Care of the Obese Critically Ill Patient:

Examination of the Processes of Care

DNP Final Project

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By

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Abstract

Study Purpose: To determine if the same level of nursing care was provided to all patients, regardless of the patient's BMI, during the first 5 days after admission to a medical ICU.

Research Design: A quantitative descriptive design was used in this project.

Sample and Setting: A convenience sample was used and data collected retrospectively from medical records of subjects admitted to medical ICU between July 2010 and September 2010. Subjects ≥ 18 years of age, with both a height and weight documented were included. Individuals under 18 years old, pregnant women, prisoner patients were excluded.

Measures: Data collected included frequency of patient repositioning, frequency of oral care, height and weight, positive pressure ventilation, admission Braden Score, presence of pressure ulcer on admission and discharge, length of ICU stay (LOS), and SAPS II score.

Data Analysis: Included descriptive statistics for all clinical data collected. Correlations were calculated to determine relationships between pressure ulcers, Braden score and SAPS II scores. Analysis of variance was used with Tukey post-hoc analysis to describe the significant between-group differences.

Outcomes: The data indicate that half of all subjects admitted to the medical ICUs were obese, and 18% are morbidly obese. Morbidly obese patients have a longer ICU. There were few differences in nursing care provided to subjects based on BMI. Fifty-eight percent of the subjects were at high risk for a pressure ulcer developing, and 12% of the subjects developed a pressure ulcer. No relationship was identified between Braden Score, pressure ulcer development, and BMI.

Chapter 1: Nature of the Project

Introduction:

One of the fastest growing chronic conditions in the United States is obesity (Ogden, Carroll & Curtin, 2006). Data collected by the Centers for Disease Control's (CDC) Behavioral Risk Factor Surveillance System (BRFSS) indicates there has been a significant increase in obesity rates in the past 20 years (CDC, 2009). In 2009, Colorado was the only state that had an obesity prevalence rate of less than 20% (CDC, 2009). Results from the 2005-2006 National Health & Nutrition Examination Survey (NHANES) indicate an estimated 32.7% of adults in the U.S. are overweight, 34.3% are obese, and 5.9% are morbidly obese (CDC, National Center for Health Statistics [NCHS], 2010). See Figure 1 for 2009 obesity trends.

As the prevalence of obesity increases, there has also been an increasing trend in the number of hospitalized patients that are obese, and these statistics are replicated in the area of critical care (McAttee & Personett, 2009). Reports indicate that of the 5 million adults that are admitted to an ICU annually, 12-37% of the patients admitted are obese (Winkelman, Maloney, & Kloos, 2009). It is not uncommon for hospitals to be unprepared to care for the needs of this patient population, when considering the need for special equipment and guidelines to direct the delivery of nursing care (McAttee & Personett 2009; Winkelman & Maloney, 2005).

Over the past few years it has been noted by staff members working in a medical intensive care units (ICU) at an academic medical center, that there 'seems' to be an increasing number of obese patients admitted to the unit. Nursing leadership and staff have frequently voiced concern that there is a lack of appropriate equipment and guidelines to properly care for this patient population. Seemingly simple tasks, such as movement of a patient from a cart to a bed, transport from the intensive care unit to another department for radiologic testing, or repositioning a patient in bed can be challenging for nursing staff and may require planning by multiple disciplines.

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From an institutional perspective, care of the obese patient has been determined to be an area of concern and an organizational priority. Through the medical center's shared governance structure, a Nursing Research Executive Council was formed, with a goal of creating a culture of nursing inquiry and scholarship. The council identified five clinical practice problem groups as foci of clinical interest. The Obesity Clinical Practice Problem group was one of the groups identified.

The group was formed to examine the care of the obese patient, including the impact on the patient and the nurse. Group members discussed concerns about the quality of nursing care received by the obese patient population, availability of tools to assist nursing staff provide appropriate care, attitudes of nurses caring for the obese patient population and the lack of evidence based guidelines to facilitate best practice. Using the *Iowa Model of Evidence-Based Practice to Promote Quality Care* (Titler, et al., 2001), the model adopted by the institution to guide evidence-based nursing practice, a group member initiated a project to assess quality of nursing care of the critically ill obese patient.

Body Mass Index: Measurement of Obesity

Body Mass Index (BMI) is an expression of weight relative to height, and is the most widely used diagnostic tool to identify weight problems within a population, usually whether individuals are underweight, overweight or obese (National Heart, Lung, and Blood Institute [NHLBI], 1998). BMI does not directly measure percentage of body fat, but it is a more accurate indicator of being overweight and/or obese than relying on weight alone (NHLBI, 2000). BMI is calculated by dividing a person's weight in kilograms by height in meters squared (NHLBI, 2000). A BMI $<18 \text{ kg/m}^2$ is considered underweight; $18\text{--}24.9 \text{ kg/m}^2$ is considered normal weight; $25\text{--}29.9 \text{ kg/m}^2$, $30\text{--}34.9 \text{ kg/m}^2$ considered overweight or class I obesity; $35\text{--}39.9 \text{ kg/m}^2$ is considered as class II obesity; and BMI $\geq 40 \text{ kg/m}^2$, is considered as class III obesity, commonly referred to as morbid obesity or extreme obesity (World Health Organization [WHO], 2006).

Keeping in mind that since BMI is calculated from an individual's weight, which includes both muscle and fat, it is not a direct measure of body fatness (CDC, 2009). Because of this, individuals may

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have a high BMI but not a high percentage of body fat, such as a highly trained athlete. Although some individuals in the overweight range (BMI from 25 to 29.9 kg/m²) may not have excess body fatness, most people with a BMI in the obese range (≥ 30 kg/m²) will have increased levels of body fat (CDC, 2009).

Purpose:

The purpose of this project is to examine the process of care for the critically ill patient by describing the current nursing care practices, based upon the patient's body mass index (BMI). This evaluation is necessary to determine if the same level of nursing care is being provided to all patients, regardless of the patient's BMI. Additionally, the relationship between nursing care practices and patient outcomes were examined, including pressure ulcer development and length of ICU stay.

Project Objectives:

The primary objective of the project was to determine if the same level of nursing care is being provided to all patients, regardless of the patient's BMI, during the first 5 days following the patient's admission to a medical ICU. Other objectives of the project included an examination of the relationship between nursing care delivered and positive pressure ventilation, and the relationship between nursing care delivered and the development of pressure ulcers.

Significance of Study to Nursing and Healthcare:

Hospitalization of the obese patient often presents a challenging experience for the nursing staff. Obese patients require special equipment and additional personnel for routine care delivery. Patients may have a decreased level of consciousness, be sedated and unable to assist in their movement. Interventions to prevent complications of bedrest or to the obese patient, including such basic care measures as oral care, suctioning, turning or repositioning, may be related to the availability of nursing staff and special equipment.

Because of the additional resources required to care for the critically ill obese patient, one might assume that providing routine care, especially turning and repositioning, does not occur as frequently as when caring for the non-obese patient population. Providing staff with the correct tools, such as a

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guideline for care and proper equipment are necessary to provide care to this special patient population may improve patient care delivery and patient outcomes.

The findings will be used, along with current literature, to make recommendations for the development of a best practice guideline for the care of the obese critically ill patient. Additionally, data obtained from this evaluation will allow for more accurate estimate of the number of obese patients admitted to the medical intensive care units. This data can assist with making recommendations for purchase of appropriate assistive equipment and devices for patient movement in the medical ICU areas.

Chapter 2: Review of the Literature

Theoretical Framework:

Evidence-based practice (EBP) is a problem solving approach to clinical care that incorporates the conscientious use of current best evidence from well designed studies, a clinician's expertise, and patient values and preferences (Melnik & Fineout-Overholt, 2011). Evidence-based practice principles enable the nurse to have the tools with which to improve practice and determine best practices within a complex health care system (Melnik & Fineout-Overholt, 2011). Use of EBP allows nurses to deliver care that is better than the 'status quo'.

There are specific criteria for appraising evidence as valid or invalid, which enhance the efficiency of integrating research into practice with accompanying strategies and methods for evaluating the outcomes facilitating the integration of EBP process into the culture of an organization (Titler, et al., 2001). One of these EBP models is the *Iowa Model of Evidence-Based Practice to Promote Quality Care* (Titler, et al., 2001), which will be utilized for the analysis of the issue of caring for the obese and morbidly obese critically ill patient. This model has been adopted by the medical center to facilitate evidenced based practice utilization by nursing staff (Appendix A).

Titler, et al. (2001) developed the Iowa Model, an organizational model that addresses quality practice from a deductive reasoning approach (Titler, et al., 2001; Fineout-Overholt, Melnik, & Schultz, 2005). Titler clearly addresses the process by which an issue is evaluated. The process is initiated by triggers, either problems or new knowledge that has become available, which are relevant to practice. The process is completed with evaluation of outcomes and continues with dissemination of findings (Titler, et al., 2001). The nine phases or processes included in the Iowa Model (Titler, et al., 2001) are:

1. Generation of the question from either a problem or new knowledge
2. Determine relevance to organizational priorities
3. Develop a team to gather and appraise evidence
4. Determine if the evidence answers the question

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5. a. If there is sufficient evidence, pilot the change in practice
b. If there is insufficient evidence, generate evidence through research or base practice on other types of evidence (case reports, expert opinion, scientific principles or theory)
6. If change is initiated based on the evidence, deem appropriateness of change to practice
7. If appropriate, institute change
8. Evaluate structure, process and outcome data
9. Disseminate results

Following the model, the clinical question identified was generated based on the concerns voiced by nursing leaders regarding the lack of resources to care for the increasing number of obese patients being admitted to the medical ICUs at the medical center. The care of the obese patient population was identified by the organization as an area of practice concern. A team was formed, the literature was reviewed.

Review of the literature showed there is a limited scientific base available regarding the nursing care of the critically ill obese patient population. The literature clearly suggests a need for ongoing research in the care of this patient population. In accordance with the *Iowa Model*, until more evidence is available, nursing practice will need to be based on other types of evidence, such as case reports, expert opinion, scientific principles or theory. Before being able to make recommendations for an evidence-based practice guideline, selection of outcomes to be achieved and collection of baseline data was indicated.

Literature Review:

Many nursing care challenges are presented in the care of the obese patient in a critical care unit, including difficulty repositioning, mobilizing patients and providing basic nursing care. Co-morbidities related to obesity including diabetes, hypertension, cardiovascular disease and pulmonary dysfunction, may make a morbidly obese patient more acutely ill when admitted to an intensive care unit, and place the patient at higher risk for complications related to immobility (Winkelman, et al., 2009).

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While a large amount of literature has been published regarding care of the obese patient, very little research has been done regarding nursing care of the obese critically ill patient population. Much of the literature has been published is based on physiologic changes attributable to obesity that may be relevant in critical illness, expert opinion and case review.

One of the biggest challenges of providing care for the morbidly obese patient that is critically ill is related to issues with the pulmonary system. Pulmonary assessment and pulmonary function is compromised in critically ill patients who are morbidly obese and the compromise increases as the BMI and weight increases (Siela, 2009). Reduced lung volume is common in patients with a BMI > 40 kg/m². The combination of thoracic kyphosis, lumbar lordosis, elevated diaphragm, and layers of fat on the chest and abdominal walls causes significant decreases in chest movement and lung volumes in the morbidly obese patient (Siela, 2009). Additionally, auscultation of breath sounds is more difficult, requiring the nurse to listen from breath sounds by displacing all skin folds over the chest area to increase ability to detect changes (Siela, 2009).

Garrett, Lauer, & Christopher (2004), discusses implications for nursing care of the obese critically ill patient regarding assessment of cardiac and pulmonary function, optimizing function and preventing complications. Increased adipose tissue mass may impact the nurses ability to accurately auscultate heart sounds and lung sounds, assess jugular venous distension, palpate peripheral pulses, and assess the patient's blood pressure (Garrett, et al., 2004). Recommendations include an awareness of adaptations that can be used to improve skills when working with this patient population to facilitate both assessment and physiologic function of the cardiac and pulmonary systems (Garrett, et al., 2004).

Burns, Egloff, Ryan, Carpenter, & Burns (1994) conducted research regarding positioning of the obese patient to prevent excessive abdominal pressure against the diaphragm and allow adequate diaphragmatic excursion is important in the care of the obese critically ill patient. Burns, et al. (1994) studied the effect of positioning on tidal volume and respiratory rates in patients with obesity. They compared mechanically ventilated patients with large abdomens in different positions related to head-of-

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bed elevation. The position that resulted in the largest tidal volume was 45° reverse Trendelenburg, which allows the abdomen to drop down away from the thoracic cavity, promoting diaphragmatic excursion (Burns, et al., 1994). The authors also believed that this positioning may also decrease intra-abdominal pressures, decreasing the risk of gastric reflux and pulmonary aspiration in the obese patient (Burns, et al., 1994).

Another source of nursing research done in the area of care of the critically ill obese patient was conducted by Winkelman and Maloney (2005). This prospective, cross-sectional, descriptive study aimed to provide baseline information about the obese ICU patient as well as examine the resources critical care nurses used to care for this population of patients. The relationship between resources used and patient outcomes, including complications and length of stay, was also examined. The researchers found that patients with a BMI of 40 kg/m² required the use of special equipment ($p=0.05$), and required at least 4 staff for positioning ($p=0.004$) (Winkelman & Maloney, 2005). The researchers also noted that the most common adverse event experienced by participants in the study were related to the pulmonary system, including pneumonia, pulmonary embolus, and aspiration, frequently leading to mechanical ventilation (Winkelman & Maloney, 2005). The number of days the patient received mechanical ventilation correlated with the occurrence of pulmonary complications ($r = 0.387$, $p = 0.01$) (Winkelman & Maloney, 2005). The occurrence of pulmonary complications correlated to the occurrence of cardiac complications ($r = 0.491$, $p = 0.001$), including atrial fibrillation, myocardial infarction and new onset congestive heart failure. Difficulty in gaining venous access was not correlated with BMI in this study ($p = 0.15$) (Winkelman & Maloney, 2005).

Davidson, Kruse, Cox, & Duncan, R. (2003), presented a case study of the care of the morbidly obese post-operative surgical patient. Recommendations for a regular schedule of manual turning and repositioning is necessary; however, careful planning to properly equip the critical care area to improve the ability of the staff to provide care to the morbidly obese patient while not causing harm to the caregiver is key in to successfully provide care for this patient population (Davidson, et al., 2003). They

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concluded that nursing care of the morbidly obese is multiplied by the effect of body size on routine procedures. Teamwork and attention to detail were key in providing ideal patient care (Davidson, et al., 2003). Implementation of scheduled manual turning is extremely difficult without resources such as special lift equipment or numerous staff members (Davidson, et al., 2003). Inability to turn patients frequently not only has an impact on the pulmonary system, but also impacts the nurse's ability to properly care for the morbidly obese patient's skin (Davidson, et al., 2003).

Rose and Drake (2008) lead a task force of the National Association of Bariatric Nurses (NABN) that focused on developing guidelines for the best practice for skin care of the morbidly obese patient. The guidelines were reviewed by the bariatric committee of the Wound, Ostomy and Continence Nurses Society. The task force conducted a literature search; initially identifying 31 articles were for review. Of these, 20 articles were relevant to the development of the document. Major recommendations included thorough assessment, excellent hygiene, maintaining skin in dry environment, avoiding pressure on the skin, recommendation of a nutritional evaluation, and encouraged research in the area of skin care. Again, this review was not specific for the care of the critically ill patient. The group intended to include evidence-based articles; however, expert opinion was the highest level of evidence found in the literature review.

When searching for the best evidence, clinicians should first begin with meta-analyses of randomized controlled trials (RCT) as the strongest level of evidence to base practice decisions (Melnik & Fineout-Overholt, 2011). The hierarchy of evidence is then followed by RCT; evidence obtained from trials without randomization; case-control and cohort studies; systematic reviews of descriptive and qualitative studies; single descriptive or qualitative studies, and finally evidence from the opinion of authorities and/or reports of expert committees (Melnik & Fineout-Overholt, 2011).

Expert opinion is described as information about a topic generated from individuals or professional organizations that have a plethora of expertise in an area of practice and use some scientific evidence to base their opinions (Melnik & Fineout-Overholt, 2011). Although 'expert opinion' can

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provide valuable information for practice, caution should be used when using this level of evidence (Melnik & Fineout-Overholt, 2011). There are some instances when expert opinion is the best available evidence to answer a clinical question (Melnik & Fineout-Overholt, 2011).

McGinley and Bunke (2008), heading a task force of the National Association of Bariatric Nurses, developed guidelines for safe patient handling of the morbidly obese patient. These guidelines were developed specifically for nurses and healthcare workers involved in caring for this population. The method used to collect evidence for the guideline was an electronic journal database search. Of the more than 210 articles identified in the initial search, 32 articles were selected for review, based on expert opinion. The focus of the recommendations includes the care of all hospitalized morbidly obese patients, including those in the critical care environment. Major recommendations and findings felt to impact the patient and caregiver safety included the patient's: ability to assist, level of cooperation, co-morbidities, ability to bear weight, ability to assist in making body parts accessible, level of respiratory compromise, upper extremity strength, as well as the availability of proper equipment. Underlying principles and findings important for general patient safety included: communication, use of protocols, staff providing care, and outlining patient flow (McGinley and Bunke, 2008).

Hurst, Blanco, Boyle, Douglass & Wikas (2004) developed a template to guide proactive nursing care planning in critical care settings. Recommendations were provided to identify appropriate resources and equipment required to provide care for the morbidly obese patient to ensure physiological and psychological well-being in a critical care setting (Hurst, et al., 2004). They concluded that a concerted team approach can help prevent as well as manage the myriad of health consequences that may arise when the morbidly obese patient requires critical care services (Hurst, et al., 2004).

In the medical literature, several studies have been done looking at morbidity, mortality and BMI. In a prospective, observational cohort study, Peake, Moran, Ghelani, Lloyd & Walker (2006), evaluated the effect of intensive care admission BMI on the 30-day and 12-month survival in critically ill patients to determine the impact of obesity on outcome. These researchers concluded that ICU admission BMI was a

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determinant of short to medium term survival, but was not associated with adverse outcomes and may be protective (Peake, et al., 2006).

This research was confirmed by O'Brien, et al., (2006). A retrospective cohort study looked at the association between BMI and hospital mortality in critically ill adults with acute lung injury. These researchers found that there was an association between BMI and odds of death. Lower BMIs were associated with higher odds of death, whereas overweight and obese BMIs were associated with lower odds of death (O'Brien, et al., 2006).

Sakr, et al., (2008) looked at obesity in relationship to morbidity and mortality in critically ill patients. This study included 198 ICUs in 24 European countries and included all patients admitted to participating ICUs. Patients were classified according to BMI. Obese patients developed ICU-acquired infections more frequently than patients in lower BMI categories, and showed trends towards longer ICU length of stay (Sakr, et al., 2008). However, there were no significant differences among the groups in ICU and hospital mortality rates (Sakr, et al., 2008).

Chapter 3: Methodology

Study Design:

A quantitative descriptive design was used to examine of the process of care for the obese critically ill patient. A retrospective chart review was completed to obtain an accurate ‘picture’ of the current nursing care provided to patients. The data focused on current nursing care practices identified as ‘nursing specific indicators’ such as frequency of oral care, turning and repositioning, which have been linked to the prevention of hospital acquired complications (Needleman, Buerhaus, Mattke, Stewart & Zelevinsky, 2002). Data representing current nursing care practices of the critically ill patient, as well as a current review of literature on appropriate care practices, was used in the development of a best practice guideline for the care of the obese critically ill patient.

Sample:

Following Institutional Review Board (IRB) approval, data was collected retrospectively from medical records of patients admitted to the medical intensive care unit service between July 2010 and September 2010. A convenience sample was used. Subjects were patients admitted to the ICU ≥ 18 years of age, with both a height and weight entered into the electronic medical record (EMR). Individuals under 18 years old, pregnant women, prisoner patients or those in which a height and weight was not entered into the EMR within 24 hours of admission were excluded from this study.

Methods:

Retrospective data was collected on all patients included in the sample to determine whether or not the nursing care delivered to patients was the same regardless of the patients BMI. Data was collected from the electronic medical records on the first 5 days of the medical ICU admission, including frequency of oral care interventions and positioning during each 24 hour period.

Information regarding admissions was obtained using daily logs of all patients admitted to either medical ICU during the study period. The logs included the patient’s medical record number, date and time of admission; however, no personal identifying information was recorded or retained for this project.

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The tool used for data collection was developed by the researcher and has not been tested for validity or reliability. Nurses in the medical ICUs document electronically using the Essentris™ documentation system. Although this documentation system offers the benefit of easy access, automated abstraction of data from this system is not easy or reliable. Extraction of data from this system necessitated manual data collection. Only one researcher, with expertise in the use of the Essentris™ documentation system, collected all data; therefore, inter-rater reliability between data collectors was not necessary. All data collected was available in the electronic medical record.

Instruments:

The data collection tool used was developed by the researcher, and reviewed by other content experts, including critical care nurses and advanced practice nurses. The following data was extracted: height and weight, used to calculate body mass index (BMI); presence of artificial airway, frequency of number of patient turns per each 24 hour period; frequency of oral swabbing, deep oral suction and teeth brushing during each 24 hour period, number of days in ICU and hospital, evidence of more than one ICU admission during the same hospitalization, Braden score upon admission to ICU, presence of contact isolation, SAPS II score, and evidence of hospital acquired conditions. Demographic data collected includes: gender, race, age, and location of ICU. (Appendix B)

Outcomes Measures

Outcome measures included collection of data to determine if the same level of nursing care is being provided to all patients, regardless of the patient's BMI, during the first 5 days after admission. Data collected included frequency of oral care provided, frequency of patient repositioning, and the patient's height and weight, used to calculate BMI.

An additional outcome measured was examination of the relationship between nursing care delivered and positive pressure ventilation. Data collected to measure this outcome included frequency of oral care provided, frequency of patient repositioning, need for positive pressure ventilation and number of days in medical ICU.

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A third outcome measure included the relationship between nursing care delivered and development of pressure ulcers. Data included frequency of repositioning, admission Braden Score, presence of pressure ulcer on admission to the medical ICU, presence of pressure ulcer on discharge from the medical ICU, number of days in medical ICU, and the Simplified Acuity Physiology Score II (SAPS II) completed within 24 hours of admission.

Data Collection Procedures

Patient data was divided into groups based on BMI. The groups include: BMI $<18 \text{ kg/m}^2$, underweight; BMI $18\text{--}24.9 \text{ kg/m}^2$, normal weight; BMI $25\text{--}29.9 \text{ kg/m}^2$, overweight; BMI $30\text{--}34.9 \text{ kg/m}^2$, class I obesity; BMI $35\text{--}39.9 \text{ kg/m}^2$, class II obesity; and BMI $\geq 40 \text{ kg/m}^2$, class III obesity, commonly referred to as morbid obesity or extreme obesity (WHO, 2006).

Data was also collected regarding the severity of illness of patients admitted to the units. The medical ICU's use the Simplified Acute Physiology Score (SAPS II) to determine severity of illness. The SAPS II score is an effective system for estimating the probability of mortality for ICU patients (La Gall, Lemeshow, & Saulnier, 1993). This score is calculated using 17 variables: 12 physiologic variables in addition to age, type of admission (scheduled or unscheduled), and three underlying disease variables (acquired immunodeficiency syndrome, metastatic cancer, and hematologic malignancy). The 12 physiologic measurements are scored during the first 24 hours of the patients ICU stay, taking into account the worst value during the first 24 hours in the ICU (Le Gall, et al., 1993). The probability of mortality is calculated directly from the score using a logistic regression equation, without adding points or any sort of correction for diagnosis (Le Gall, et al., 1993). The maximum possible SAPS II score is 163; the higher the score, the higher the risk of hospital mortality (Le Gall, et al., 1993). This score is best when used as an aggregate versus individual patient scores because the model was developed using a large and heterogeneous database and the probability should be thought of as the probability for an average patient (Le Gall, et al., 1993). The system is primarily used by clinicians to describe mortality of a group of patients when comparing the outcomes with another group of patients (Le Gall, et al., 1993).

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Braden score data was collected to assess for risk of pressure ulcer development. The Braden Scale (Braden & Bergstrom, 1988) is an assessment tool used in the medical ICUs to identify patients at risk for pressure ulcer development. This tool assigns a score based on 6 subscales: sensory perception, moisture, activity, mobility, nutrition and friction and shear, with a total possible score ranging from 6-23 (Bergstrom & Braden, 2002). A total score of ≤ 18 indicates the patient is at risk for developing a pressure ulcer, and a score of 12 or less indicates a high risk (Bergstrom & Braden, 2002).

Data Analysis:

Data analysis included descriptive statistics (mean, median, ranges) for all clinical data collected from medical record. To determine relationships between deep pressure ulcers, Braden score and SAPS II scores, correlations were calculated. To assess for differences in intervention application by BMI group, analysis of variance was used (ANOVA) with Tukey post-hoc analysis planned to describe the significant between-group differences when indicated.

Chapter 4: Findings

Results:

Description of the Sample

There are two medical ICUs at OSUMC. Unit A is a 25-bed unit and Unit B is a 13-bed unit. Each unit provides care to medically managed, critically ill patients. Usual staff to patient ratio is 1:1.5, based on patient acuity. On average two-thirds of the patients require mechanical ventilation. Admission criteria are the same for both units, with patients being triaged based on bed availability. The exception is for patients requiring negative airflow isolation, which is only available on Unit A.

Of the 204 subjects admitted to a medical ICU during July 2010 through September 2010, 192 (94%) met inclusion criteria. Data was collected for a total of 192 subjects, 119 (62%) were admitted to Unit A and 74 (38%) to Unit B. One hundred-six (55%) of the subjects included in this study were male. Age was noted in decades, with 57 (30%) of all subjects between 50-59 years of age, with 133 (nearly 70%) of all subjects admitted to a medical ICU 50 or older. Seventy-nine percent of the subjects were white. Additionally, 45 (23%) of all subjects were in contact isolation. SAPS II scores ranged from 12 to 139, with the mean score 58.17 ± 19.90 . Average Braden Score was 12.49 ± 2.23 . Average length of ICU stay was 8.75 ± 8.1 days.

BMI was calculated using medical ICU admission height and weight. The admission height is an actual measurement, not a 'stated' height. The mean calculated BMI was 33.20 ± 13.21 kg/m². Subjects were also categorized based on BMI. Eighteen percent of the subjects were categorized as Class III obesity, 'extremely' obese. However, when looking at the total number of subjects ranked as Class I, II or III obesity, nearly half of all subjects admitted to a medical ICU ($n = 95$, 49.5%) were considered obese ($\text{BMI} \geq 30$ kg/m²). See Table 1 for detailed description of the sample. See Figure 2 for graphical representation of sample by BMI.

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Table 1: Description of the Sample (N=192)

	Frequency (N)	Percent (%)
Total Number of Subjects		
Day 1	192	100%
Day 2	185	96%
Day 3	165	86%
Day 4	144	75%
Day 5	121	63%
Location of Patient		
Unit A	119	62%
Unit B	73	38%
Gender		
Male	106	55%
Female	86	45%
Race		
African American	36	19%
Hispanic	1	0.5%
White	152	79%
No Data	3	1.5%
Age Range in Years		
18-29	10	5.2%
30-39	17	8.9%
40-49	32	16.6%
50-59	57	29.7%
60-69	36	18.8%
70-79	28	14.5%
80 or Greater	12	6.3%
Calculated BMI (kg/m ²)*		
Underweight - <18 kg/m ²	14	7.3%
Normal Weight: 18-24.9k g/m ²	31	16.1%
Overweight: 25-29.9 kg/m ²	52	27.1%
Obesity Class I: 30-34.9 kg/m ²	33	17.2%
Obesity Class II: 35-39.9 kg/m ²	27	14.1%
Obesity Class III: > 40 kg/m ²	35	18.2%
Contact Isolation		
Yes	45	23.4%
No	147	76.6%

BMI= Body Mass Index

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Oral Care and Repositioning

The mean number of times oral swabbing was provided by nursing staff from 6.75-10.69 times per each 24 hour period. A statistically significant difference was noted on day 1 by BMI (ANOVA F 282.5, df 180, $p < 0.001$). No other differences in oral swab use by BMI were noted days 2 through 5.

The mean number of times deep oral suction (DOS) was provided was 2.34 – 2.59 times per each 24 hours. No differences were noted when using BMI as a dependent variable days 1 through 5 (ANOVA).

Teeth brushing was provided to subjects on average less than one time each day, with the mean 0.71-0.82 times per each 24 hours. Significant differences for teeth brushing by BMI were seen using ANOVA on day 2 (F 6.85, df 179, $p = 0.035$) and day 3 (F 3.55, df 151, $p < 0.0001$).

Subjects were turned or repositioned an average of 7.15-7.70 times per each 24 hours. No differences were noted in care based on BMI (Figure 3). See Table 2 for delivery of oral care, repositioning and positive pressure ventilation utilization.

Table 2: Oral Care and Repositioning

Care Provided Per 24 hours	Day 1 Mean (SD)	Day 2 Mean (SD)	Day 3 Mean (SD)	Day 4 Mean (SD)	Day 5 Mean (SD)
Total subjects	192	185	165	144	121
Oral Swabs	10.69(3.50)*	6.75(3.53)	7.15(3.80)	6.76(3.51)	7.19(3.86) [†]
DOS	2.34(2.30)	2.40(2.01)	2.45(2.15)	2.43(2.32)	2.59(2.16)
Teeth Brushed	0.80(1.03)	0.82(0.74)*	0.71(0.74)*	0.76(0.78)	0.72(0.74)
Repositioning	7.70(2.80)	7.30(3.27)	7.43(2.97)	7.15(3.06)	7.17(3.20)
PPV	116(63%)	123(66%)	106(65%)*	85(59%)	78(64%)

SD= standard deviation; DOS = deep oral suctioning; PPV= positive pressure ventilation; *P < 0.05

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Positive Pressure Ventilation

Positive pressure ventilation (PPV) was received by 59-66% of the subjects.

A statistically significant difference was noted PPV use by BMI category on day 3 ($F=2.11$, df 151, $p < 0.001$). ANOVA using PPV as an independent variable showed that subjects receiving PPV received more frequent oral swabbing on days 2-5, deep oral suction on days 1-5, tooth brushing on days 2-4, and repositioning on days 1-5 than subjects not receiving PPV. See Table 4 for summary of ANOVA results of outcomes with PPV as the independent variable.

Table 4: Summary ANOVA Table For Selected Outcomes with Positive Pressure Ventilation

Outcomes	F	df	p
Oral Swabbing			
Day 1	1.652	1	0.20
Day 2	36.498	2	0.001*
Day 3	103.929	1	0.001*
Day 4	58.541	1	0.001*
Day 5	27.289	2	0.001*
Deep Oral Suctioning			
Day 1	57.834	1	0.001*
Day 2	40.886	2	0.001*
Day 3	73.763	1	0.001*
Day 4	53.612	1	0.001*
Day 5	23.992	2	0.001
Teeth Brushing			
Day 1	0.078	1	0.78
Day 2	36.756	2	0.001*
Day 3	4.413	1	0.037*
Day 4	4.179	1	0.043*
Day 5	3.477	1	0.065
Repositioning			
Day 1	6.805	1	0.010*
Day 2	16.392	2	0.001*
Day 3	32.518	1	0.001*
Day 4	25.525	1	0.001*
Day 5	7.531	2	0.001*

* $p < 0.05$

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Pressure Ulcers

Of the 192 subjects included in the study, 31 (16%) of the subjects had a pressure ulcer present on admission. A total of 23 (12%) developed a pressure ulcer. Of these, 3 (13%) were stage I, 19 (83%) were stage II and 1 (4%) was not staged. Patient's with a BMI ≥ 40 kg/m² did have the greatest number of unit acquired pressure ulcers; however, this was not found to have statistical significance.

Braden Score

Data collected showed that an admission Braden score of ≤ 18 was documented on all but five subjects, indicating that 182 (97.4%) of the subjects including in this study were at risk for developing a pressure ulcer. The mean Braden score was 12.49 ± 1.7 , with 112 (58.6%) of the subjects considered to be at high risk for development of pressure ulcers. See Figure 4 for graphical representation of Braden Score on Admission and DC DPU.

Braden Scale negatively correlated with a pressure ulcer on admission (Spearman's Rho $r = -0.203$, $p = 0.005$). However, there was no correlation in Braden Score predicting a pressure ulcer on discharge or pressure ulcer stage. See Figure 5. *BMI Category*

ANOVA using BMI category as the independent variable showed that subjects with BMI ≥ 40 kg/m² had an increased number of ICU days compared to those < 40 kg/m² ($F = 4.207$, $df 5$, $p = 0.001$). There was also a statistically significant difference between the admission Braden score when using BMI category ($F=2.413$, $df 5$, $p = 0.038$).

Severity of Illness Score

A significant difference was seen for pressure ulcer staging by SAPS II ($F = 1.745$, $df 88$, $p = 0.004$). While no statistically significant differences were noted for new pressure ulcer on discharge by SAPS II ($F = 1.382$, $df 87$, $p = 0.06$) or SAPS II score by calculated BMI ($F = 6.077$, $df 186$, $p = 0.080$), both trended towards significance.

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Length of ICU Stay

Average length of medical ICU stay of the subjects in this project was 8.75 days. ANOVA using BMI category as the independent variable showed that subjects with BMI ≥ 40 kg/m² had an increased number of ICU days compared to those < 40 kg/m² ($p < 0.001$). The mean length of stay for a patient with a BMI ≥ 40 kg/m² was 13.89 days (Figure 6).

Discussion:

A review of the data collected showed that 55% of the subjects were male. The majority of subjects were 50 or older and had a Braden Score indicating a high risk for the development of a pressure ulcer. Nearly half of all the patient's were considered obese based calculated BMI (≥ 30 kg/m²). Almost a quarter of all subjects required contact isolation precautions. No statistically significant differences were noted in the obese patient population demographic information.

Providing the same quality of care to all subjects admitted to a medical ICU at OSUMC has always been the standard of nursing care. A review of the data collected during this project showed that there were few differences in care provided to subjects based on BMI. A difference in the number of times oral swabbing was provided by nursing staff was noted on day 1, when using BMI as a dependent variable. Significant differences were also noted in the frequency of brushing patient's teeth on days 2 and 3, based on BMI. No differences were noted in the frequency of deep oral suction or repositioning subjects when using BMI as a dependent variable days 1 through 5. Probably most concerning is that the mean frequency for brushing patient's teeth is less than one time per each 24 hour period (0.77).

A difference was noted in subjects requiring PPV when using BMI as the independent variable. Class III obese subjects (≥ 40 kg/m²), commonly referred to as morbidly obese, were more likely to receive PPV on day 3 of the medical ICU stay than subjects with a lower BMI ($p < 0.05$).

There was also a statistically significant difference in frequency of oral care and repositioning of subjects receiving PPV compared to subjects not receiving PPV. Using PPV as an independent variable

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showed that subjects on PPV received more frequent oral swabbing on days 2-5, deep oral suction on days 1-5, teeth brushing on days 2-4, and repositioning on days 1-5 ($p < 0.001$).

The difference in the oral care being provided by nursing staff may be related to the current oral care guideline used in the care of the mechanically ventilated patient. In this evidence-based guideline, subjects should receive oral swabbing every 2 hours, deep oral suction every 8 hours and tooth brushing every 12 hours (OSUMC Center for Critical Care Ventilator Bundle Guideline, 2006). Although a specific guideline is not in place for the care of the patient not receiving PPV, both medical ICU's unwritten standard of nursing care is provision of oral swabbing to all subjects every 2 hours, brushing teeth twice a day, and repositioning subjects every 2 hours, regardless of PPV. Based on this information, the only difference that should have been noted in the data that was collected frequency of providing 'deep oral suctioning', as this is not necessarily indicated in the non-intubated patient.

Of the 192 subjects included in the study, 23 (12%) developed a pressure ulcer while a patient in the medical ICU. According to the National Pressure Ulcer Advisory Panel (NPUAP) a pressure ulcer is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction (NPUAP, 2007). Risk for pressure ulcer development using the Braden Score was assessed on admission to the medical ICU in all but 1 subject. Of the 191 subjects assessed, a Braden Score of ≤ 18 was documented on 182 (97.4%) of the subjects, indicating that nearly all subjects in this study were at risk for developing a pressure ulcer. The mean Braden Score was 12.49 ± 1.7 , indicating high risk of pressure ulcer development.

Braden Scale scores negatively correlated with a pressure ulcer on admission; however, there was no correlation in the scores predicting a pressure ulcer on discharge, nor did the Braden score predict pressure ulcer severity. There was a statistically significant association between the admission Braden score when using BMI category ($r = -0.180$, $p = 0.013$), indicating that the higher the BMI, the lower the Braden Score. However, no correlation between BMI and development of a pressure ulcer, or severity of pressure ulcer was identified.

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Of the nosocomial pressure ulcers that developed while a patient was in the medical ICU, the majority were stage II ($n = 19$, 83%). A Stage II pressure ulcer is partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough, or may also present as an intact or open/ruptured serum-filled blister (NPUAP, 2007).

A significant difference was noted for pressure ulcer staging by SAPS II, indicating that subjects with a higher SAPS II score were at higher risk for developing a more severe pressure ulcer. No difference was noted for SAPS II score by calculated BMI ($F = 6.077$, $df = 186$, $p = 0.080$), but did trend towards statistical significance.

In a position statement released by the NPUAP (2010), a consensus panel of experts agreed that there are clinical situations in which the development of pressure ulcers cannot be avoided. Unavoidable pressure ulcers have been defined as the development of a pressure ulcer even though the provider has evaluated the patient's clinical condition and pressure ulcer risk factors, implemented appropriate interventions, monitored and evaluated the impact of these interventions (NPUAP, 2010). Also noted by the panel was that hemodynamic instability, often seen in the critically ill patient, may preclude turning and repositioning, thus leading to the development of 'unavoidable' pressure ulcers (NPUAP, 2010). While no differences were noted for new pressure ulcer on discharge by SAPS II ($F = 1.382$, $df = 87$, $p = 0.06$), there was a trend towards significance. This trend may have been related to possible 'unavoidable pressure ulcer' development, related to patient acuity.

Conclusions:

The retrospective data collected in this project indicates a large percentage of subjects admitted to the medical ICU are obese. A review of the data collected during this project shows that there were few differences in care provided to subjects based on BMI. A difference in the number of times oral swabbing provided by nursing staff based on BMI was noted on day 1. Significant differences were also noted in the frequency of brushing patient's teeth based on BMI on days 2 and 3. No differences were noted in the frequency of deep oral suction or repositioning subjects when using BMI as a dependent variable days 1

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through 5. Also noted was that more likely to require PPV on day 3 than those subjects with a BMI < 40 kg/m².

Nearly all patients admitted to a medical ICU are at high risk for the development of a pressure ulcer. The Braden Scale correlated with presence of a pressure ulcer on admission; however, no relationship was identified between ICU admission Braden Score and actual pressure ulcer development upon discharge from the ICU. Admission Braden Scores were lower for obese subjects admitted to a medical ICU; however, obese subjects were at no higher risk than non-obese subjects for the development of nosocomial pressure ulcers.

Chapter 5:

Summary:

The data indicate that half of all subjects admitted to the medical ICUs were obese, and nearly 20% are morbidly obese ($\text{BMI} > 40 \text{ kg/m}^2$). When a morbidly obese patient is admitted to the medical ICU, they had a longer length of ICU stay than subjects with a $\text{BMI} < 40 \text{ kg/m}^2$ and may be more likely to receive PPV longer than subjects with a lower BMI.

Providing the same quality of care to all patients admitted to a medical ICU at OSUMC has always been the standard of nursing care. A review of the data collected during this project shows that there were a few differences in care provided to subjects based on BMI, specifically oral swabbing (day 1) and teeth brushing (days 2 & 3).

Data also suggested that nearly all (97%) subjects admitted to the medical ICU were at risk for development of a pressure ulcer. Fifty-eight percent of the subjects were at 'high risk', as indicated by a Braden Score of ≤ 12 . However, data shows that 12% of the subjects actually developed a unit related pressure ulcer. And although admission Braden Scores were lower for obese subjects admitted to a medical ICU, they were no more likely to develop a pressure ulcer than the non-obese patient. No relationship was identified between ICU admission Braden Score and actual pressure ulcer development upon discharge from the ICU, leading one to question the use of this scale as a risk indicator in the critically ill patient population.

A significant difference was seen for pressure ulcer staging by SAPS II, indicating that subjects with a higher SAPS II score were at higher risk for developing a more severe pressure ulcer. While No differences were noted for new pressure ulcer on discharge by SAPS II ($F = 1.382$, $df = 87$, $p = 0.06$) or SAPS II score by calculated BMI ($F = 6.077$, $df = 186$, $p = 0.080$), both trended towards significance.

Limitations:

There are several limitations to this study. The first limitation is that the data was only collected on medical ICU subjects and may limit the generalizability of the data to other critically ill patient populations.

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Another limitation is that data was collected retrospectively, relying on documentation in the medical record. Limitations to this methodology include incomplete or missing, poorly recorded or absent information. It is unknown if the data collected is an accurate reflection of the actual care provided to subjects. Without directly observing nursing care delivery, it is impossible to determine if documentation in the medical record is an accurate account of actual care provided to the patient.

Retrospective data collection also impacted collection of the use of assistive devices by nursing staff. Patient handling and repositioning may be facilitated using appropriate sized equipment and lifting devices; however data was not collected on this equipment because this information is not documented in the medical record.

Data was not collected regarding the use of specialty beds. All beds used in the ICUs involved in the project have pressure reduction surfaces. Patients weighing more than 300 pounds require the use of a specialty bed which is rented on an as-needed basis. Some specialty beds available for use have a mode that allows for automatic turning. Nursing staff do not differentiate in the EMR whether the patient was turned manually or with the use of the 'automatic turn' feature on some specialty beds; therefore data collected may not accurately reflect nursing care provided.

Data was not collected regarding other nosocomial conditions such as central line-related blood stream infections (CLA-BSI) or ventilator associated pneumonia (VAP). The decision was made not to collect this data related to the very low known rate of occurrence in either of the medical ICUs involved in this project.

Implications for Practice:

There are several implications for practice identified from the data collected in this project. First, based on the percentage of obese subjects admitted to the medical ICUs, the morbidly obese subjects' increased length of ICU stay and difference noted in the nursing care being provided, there is need for a best practice guideline for the care of this patient population. This guideline should be written to facilitate the care of the obese critically ill patient.

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The next steps in development of this guideline would include collaboration with the hospital nurse scientist or College of Nursing faculty which might use a Delphi method to determine consensus opinion of an expert panel. Frequency of nursing care delivery and information based on available research, case studies and expert opinion to guide and facilitate care of this patient population should be the focus of this guideline.

A second implication for practice is regarding rate of unit acquired pressure ulcers. Although data collected in this project did not indicate that there is a relationship between development of pressure ulcers and BMI, a rate of 12% is much higher than the unit's current goal of 0% prevalence. Additionally, identifying an accurate prevalence rate of this nosocomial condition has been very difficult to measure previously, leading staff to question the accuracy of the information. Pressure ulcer prevalence data will be shared with unit leadership and the nursing quality department to facilitate the development of a process improvement plan.

As part of this plan, discussion points should include data collected regarding the use of the Braden Scale as a pressure ulcer risk assessment tool. The data collected in this project leads one to question the use of the risk assessment tool in the medical ICU patient population. Identifying patients at risk for pressure ulcer development using the Braden Score indicated that nearly all patients included in this project were considered 'at risk' and greater than 58% were at 'high risk'. There was no correlation between risk and actual pressure ulcer development on discharge from the ICU, nor did the Braden score predict pressure ulcer severity. And although there was a correlation with Braden Score and evidence of pressure ulcers on admission, if a pressure ulcer is present on admission, staff should be able to determine this as part of the admission assessment.

A third implication for practice includes discussions with unit leadership regarding available equipment to facilitate care of the obese patient. Providing appropriate sized equipment, lifting devices, seating, and new technologies for safe patient handling are all important aspects to provide facilitate staff's ability to provide the best patient care to every patient, regardless of BMI. Researchers

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(Winkelman & Maloney, 2005) have found that patients with a BMI of 40 kg/m² required the use of special equipment ($p=0.05$). Based on this research, an assessment of available equipment for safe patient movement should also be completed.

Fourth, implications for practice should include facilitation of data collection on an ongoing basis. Use of an electronic medical record should facilitate the collection of data to allow ongoing monitoring of patient outcomes and nurse sensitive indicators (Weaver, Delaney, Weber & Carr, 2006). Ideas should be discussed with nursing quality and information technology staff to facilitate the possible electronic collection of data, thus decreasing the need for manual data collection.

Lastly, more research is needed in the care of the obese critically ill patient. Many questions remain unanswered. These questions may focus on resource utilization of specialty beds, cost comparison of renting equipment versus purchasing equipment; and/or the development of a guide to better determine the need for specialty beds based on patient BMI.

Another question that needs to be answered is regarding patient to nurse staffing ratios. Considering that research shows (Winkelman & Maloney, 2005) that patients with a BMI > 40 kg/m² require at least 4 staff members for patient repositioning, are hospital units caring for significant numbers of obese patients adequately staffed to provide quality care? Additionally, what nursing resources are required to care for the patient with a BMI > 60 kg/m², 80 kg/m², 100 kg/m²? Morbidly obese patients are being admitted to medical ICUs, and this information would be very helpful in determining safe staffing ratios.

Implications for DNP Practice

The doctorally prepared advanced practice nurse is in a unique position to impact the care of the obese in-patient population. Using organization and systems leadership for quality improvement and systems thinking can facilitate both the care of the obese patient and the support the nursing staff caring for this patient population. The DNP is in a position to facilitate better utilization of both the current and future EMRs to collect data regarding patient outcomes. The DNP can also be a leader in the development

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of standards of care, education of staff regarding available evidence to ensure the same standard of care for all hospitalized patients. The DNP is also in an excellent position to collaborate with Ph.D. prepared nurse researchers to seek additional evidence to improve patient care outcomes for the hospitalized obese patient.

Because the obese patient presents special challenges in mobility and safe handling for the patient and staff in the acute care setting, coordination of care is extremely important. Although studies have shown that caring for the obese patient may take additional time or nursing workload, the APN is in the position of ensuring that hospital administrators understand the correlation between increased workload, staffing patterns and patient outcomes.

It is imperative that a standard for treatment is established for this ever increasing population of patients, appropriate assistive equipment is purchased to facilitate safe movement of this population and patient outcomes are studied. The DNP can be an advocate for the purchase and use of equipment that will facilitate care of the obese patient, show how this expenditure equates to a reduction in hospital acquired pressure ulcers, and resulting cost savings for an organization.

Establishment of an environment that meets the needs of the critically ill obese patient and facilitates the same standard of care is critical when caring for this unique patient population. The role of the DNP is critical to the success of research and care of this important patient population.

Conclusion:

Obesity is one the fastest growing chronic condition in the United States, and as the prevalence increases, it is imperative that bedside clinicians be supported with best-practice guidelines and proper equipment to provide care for this population of patients. The role of the DNP is vital in ensuring that guidelines using available evidence and expert opinion are written to facilitate care of the critically ill obese patient. Additionally, providing hospital administration data regarding prevalence of this patient population is important in advocating for resources to support the bedside clinician in providing quality of

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care to all patients. DNPs have an excellent opportunity to positively impact the care of the obese patient population.

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Figure 1: Obesity Trends* Among U.S. Adults
BRFSS, 2009

(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)

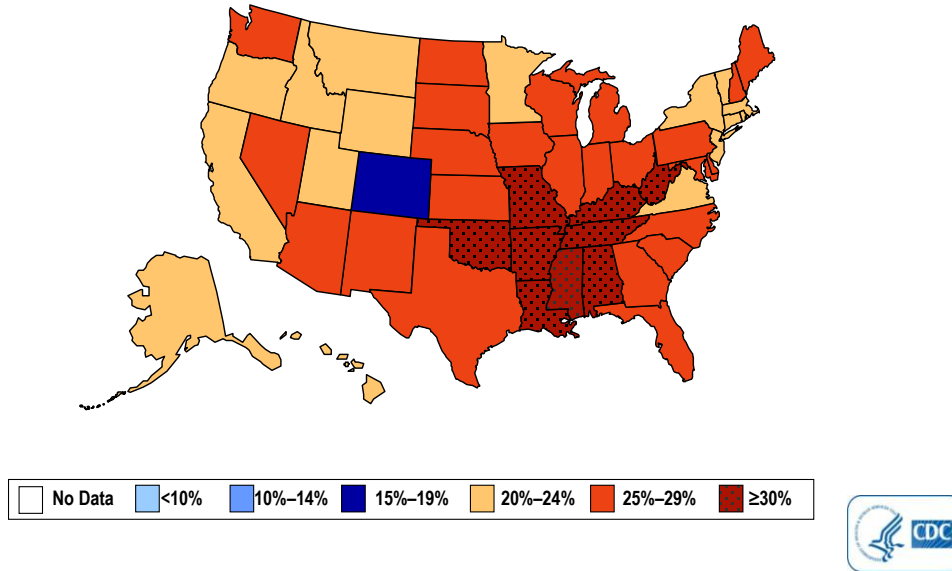


Figure 2: Sample Description – BMI

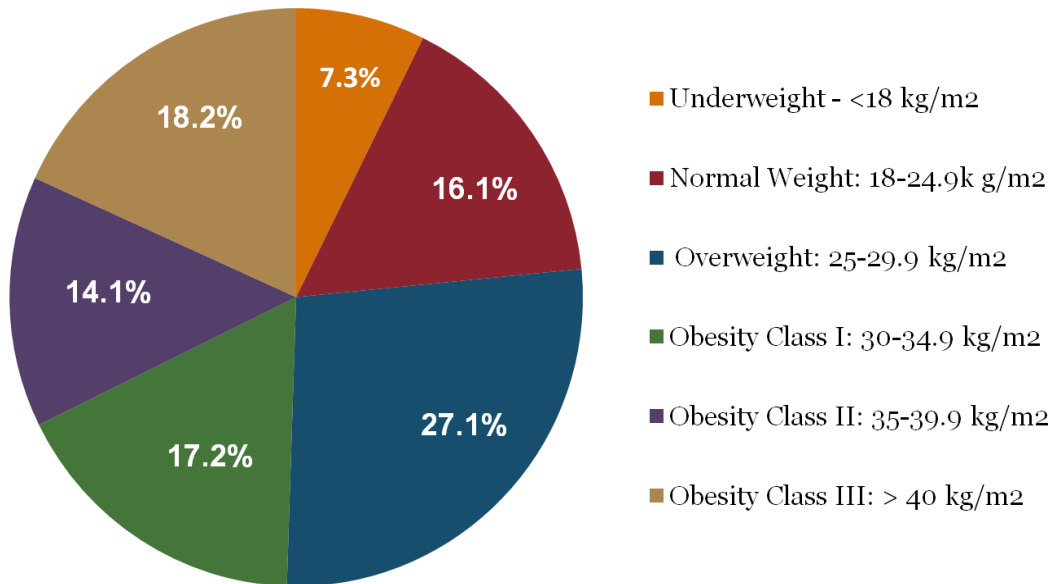


Figure 3: Frequency of Turns by BMI

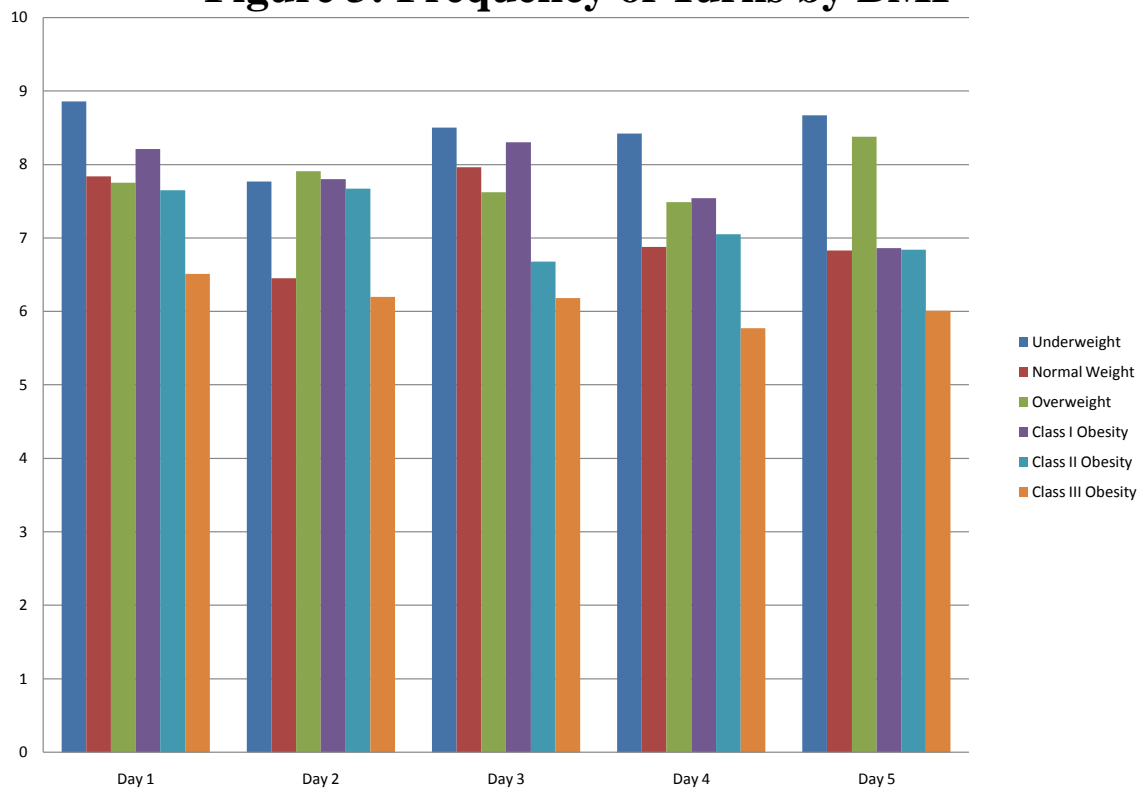


Figure 4: Admission Braden Score and Pressure Ulcers on Discharge

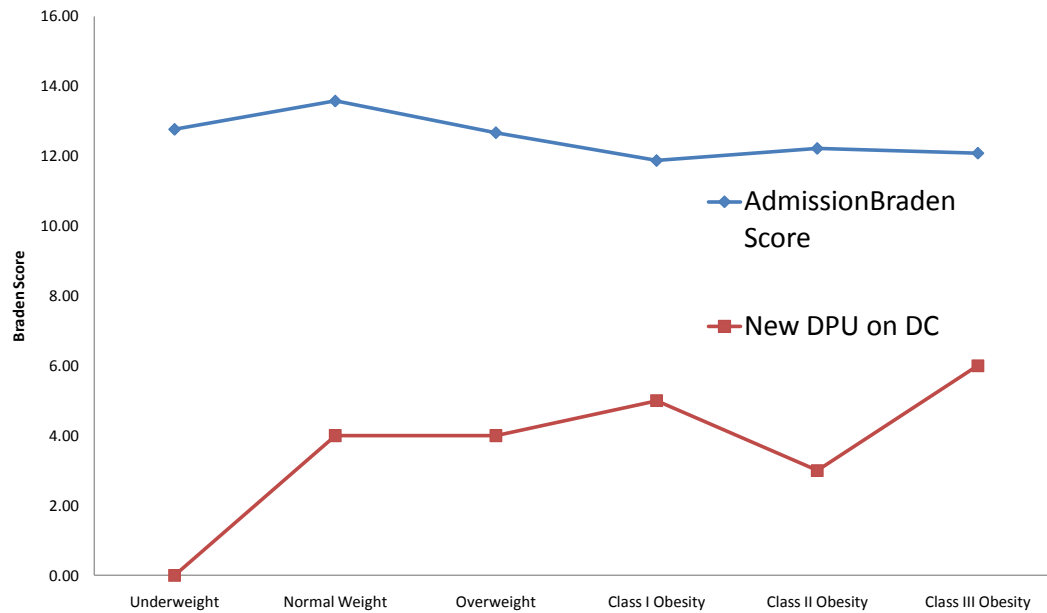


Figure 5: New DPU on DC by BMI

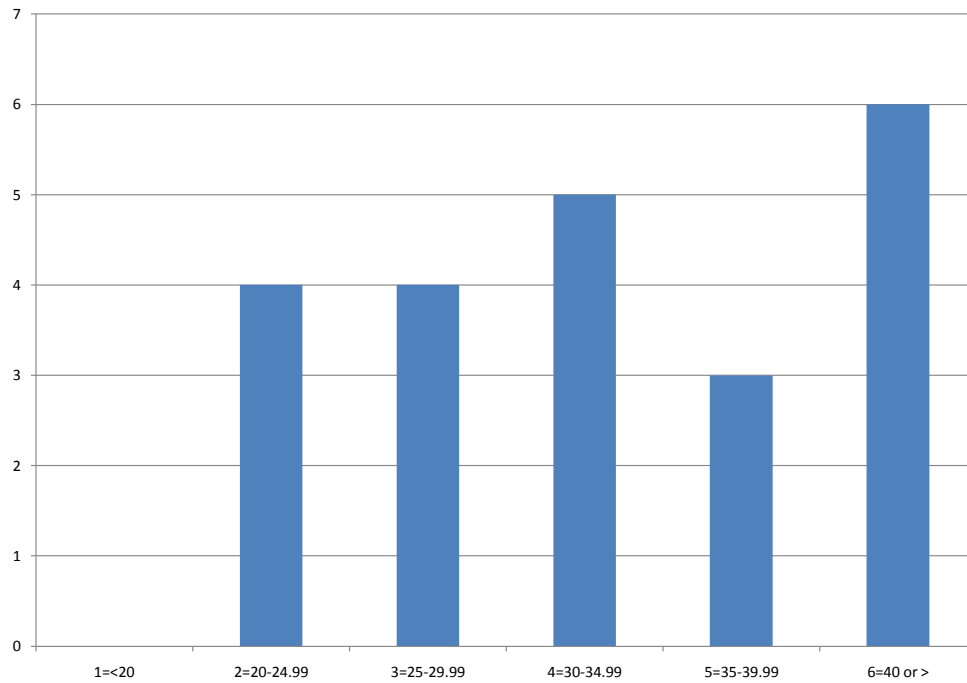
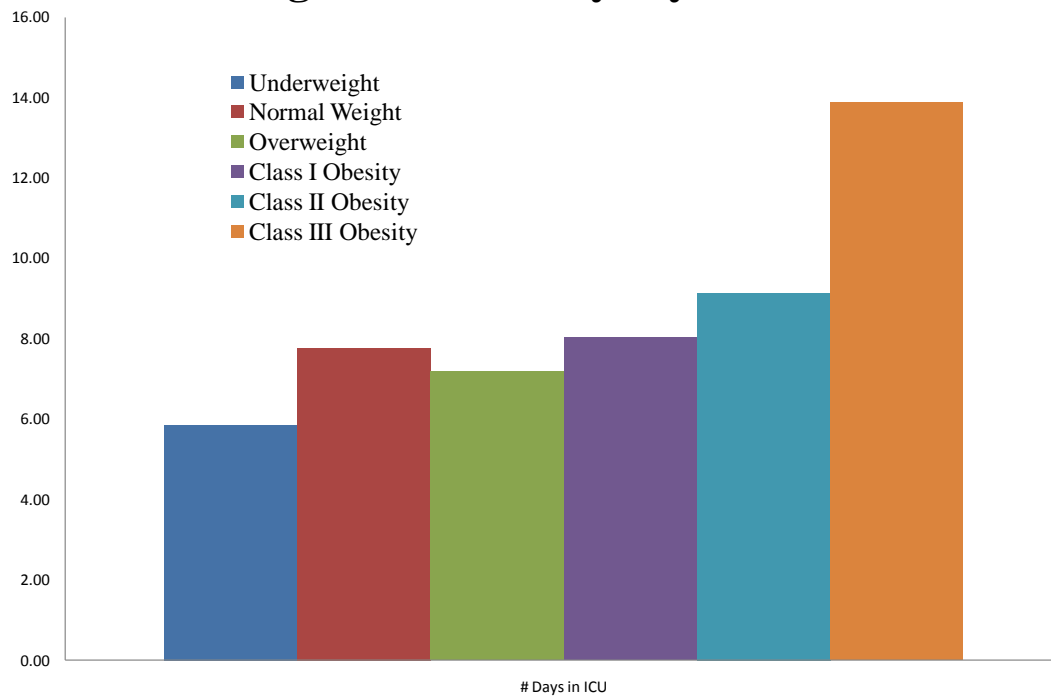


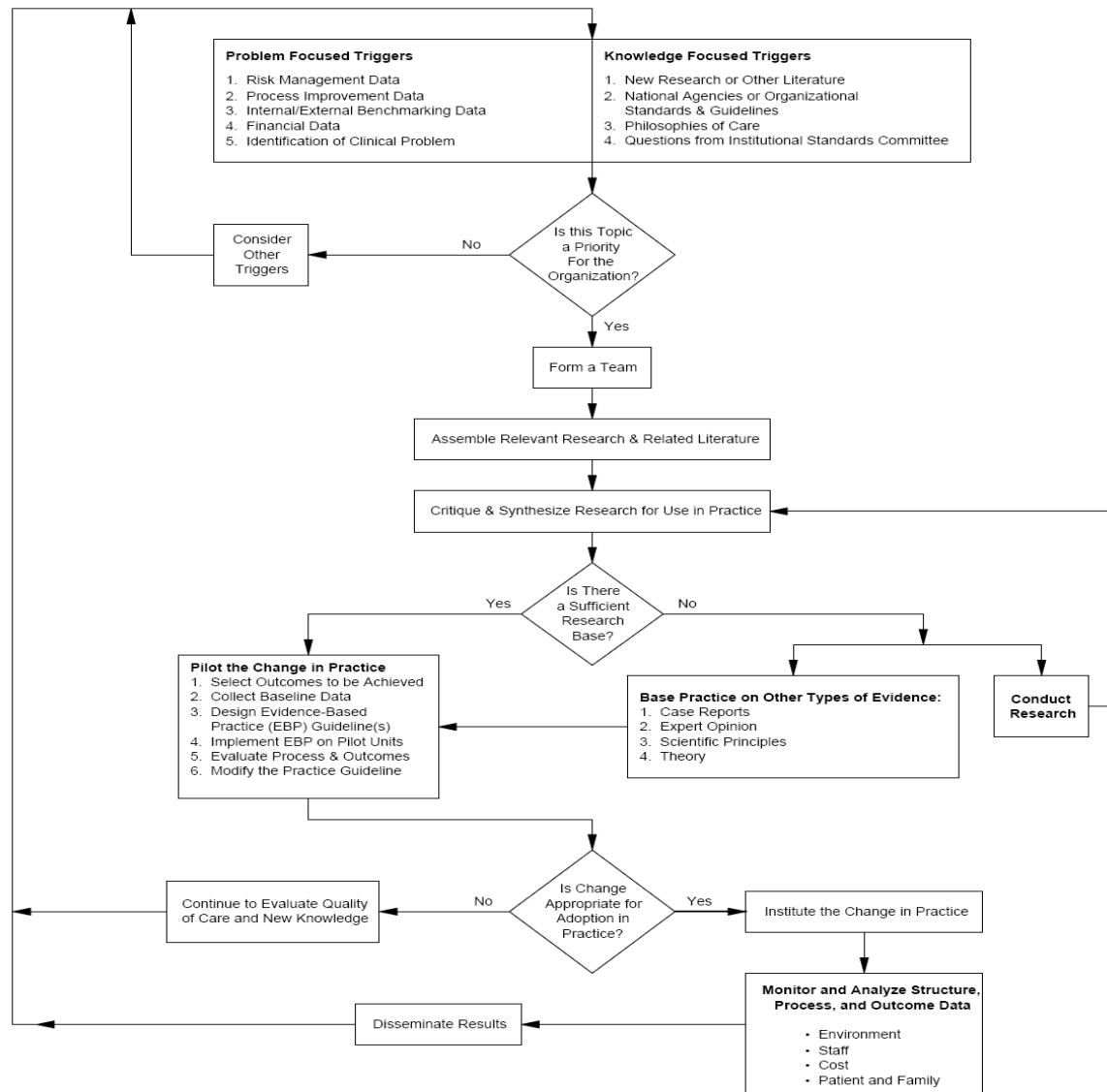
Figure 6: ICU Days by BMI



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Appendix A

The Iowa Model of Evidence-Based Practice to Promote Quality Care



◊ = a decision point

Reference

Titler, M.G., Kleiber, C., Steelman, V., Rakel, B., Budreau, G., Everett, L.Q., Buckwalter, K.C., Tripp-Reimer, T., & Goode C. (2001). The Iowa Model of Evidence-Based Practice to Promote Quality Care. *Critical Care Nursing Clinics of North America*, 13(4), 497-509.

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NURSING CARE OF THE OBESE CRITICALLY ILL PATIENT

Appendix B

Nursing Care of the Obese Critically Ill Patient Data Collection Tool

Subject # _____

Exclusion Criteria:

All exclusion criteria questions below must be answered 'no'. If 'yes' is checked the subject may not be included in the trial.

Yes No

☐☐

Prisoner Patient

Yes

No

☐☐

Less than 18 years of age

Inclusion Criteria:

All inclusion criteria questions below must be answered 'yes'. If 'no' is checked the subject must not be included in the trial.

Yes

No

☐☐

Height and weight entered into EMR within 24 hours of admission

Data Collection:

Patient Admission Height: _____cm

Patient Admission Weight: _____kg

Age: _____

Gender: Male

☐

Female

☐

Race: White

☐

African American

☐

Asian

☐

Spanish

☐

Other

☐

DPU present on admission?

Yes

No

Date of Admission _____

First unit of admission MICU?

Yes

No

Date of Discharge _____

Contact Isolation:

Yes

No

NURSING CARE OF THE OBESE CRITICALLY ILL PATIENT

Documentation of Nosocomial Events: DPU on DC: Yes

No

If yes, Number / Stage of DPUs _____

<i>Review documentation to validate standards of practice and care.</i>	Day 1	Day 2	Day 3	Day 4	Day 5
Date					
Presence of an ETT	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA
Braden Score on admission		X	X	X	X
Number of times Oral care with swabs documented					
Number of hours audited (if not 24h)					
Number of times Deep Oral Suction documented					
Number of hours audited (if not 24h)					
Number of times Teeth brushed					
Number of hours audited (if not 24h)					
Number of times patient turned					
Number of hours audited (if not 24h)					